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Examining Factors Influencing Youth Farmers' Involvement in Crop and Animal Self-Projects in Rural Areas of Akwa Ibom State, Nigeria

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Abstract

The research identified the policy variables necessary to promote youth engagement in crop and animal production within the rural regions of Akwa Ibom State, located in southern Nigeria. A combination of sampling methods was employed to select 300 youth farmers from the study area. To analyze the collected data, descriptive statistics and Poisson regression analyses were conducted. The empirical findings indicated that the number of years youth farmers have participated in social organizations, the frequency with which they access state-owned agricultural programs, the visits from extension agents, their level of formal education, and their purpose for farming all positively influenced the number of crops cultivated and animals raised by them in the rural areas. Conversely, the cost associated with hired labor exhibited a negative correlation with the number of agricultural enterprises adopted by the youth farmers. To enhance youth participation in crop and animal production in the region, it is recommended that the government strengthen the agricultural extension system and implement more youth-focused agricultural intervention programs. Fostering social networks among youth farmers and improving educational facilities in rural areas should be prioritized. Furthermore, an input supply system tailored specifically for youth farmers should be established to decrease production costs. Additionally, the establishment of farm machinery rental centers in the rural areas of the state could help alleviate the high costs of hired labor faced by youth farmers in the region.

Keywords: Agricultural production, Animal production, Crop production, Farmers, Youth.

1. Introduction

Agricultural diversification and rural-urban migration among youth in rural Nigeria pose significant challenges to the agricultural sector (Akpan, 2010; Nchuchuwe & Kehinde, 2012, Akpan et al, 2017, Akpan et al, 2023a). Agricultural economists have suggested that ongoing agricultural diversification and rural-urban migration may undermine the traditional function of the agricultural sector as a source of employment for rural youth, particularly in developing economies (Akpan, 2010; Maxwell et al., 2014). The associated consequences encompass the reluctance of youth to engage in farming due to relatively low returns, increase food insecurity, youth restiveness, increased crime rates, high labor costs, and underutilization of agricultural resources (Akpan, 2010; Ajufo, 2013; Adebayo, 2013). Furthermore, many analysts contend that the agricultural sector possesses significant potential to absorb surplus labor from other sectors of the economy (Akpan, 2010; Maxwell et al., 2014, Udousung et al., 2020). Nigeria's agricultural sector is endowed with vast natural resources that could effectively engage the surplus or idle labor in its economy, thereby contributing to a reduction in unemployment and poverty (Udoh et al., 2017, Edet et al., 2024a and 2024b). The abundant evergreen rainforest in the south, the fertile savanna soil in the north, and the rich water bodies surrounding the coastal states have the potential to create an endless number of job opportunities for idle and unemployed youth when these resources are appropriately harnessed. However, the way agricultural innovations, projects, and policies are structured influences youth involvement in the agricultural sector. The decision of youth to participate in agricultural production or projects is intricately linked to the cultural, political, environmental, and economic contexts of their society (Akpan et al., 2016, Effiong et al., 2018). Given that youth are particularly susceptible to change, it is crucial to identify the decision-making variables that shape their behavior towards the initiation and sustainability of agricultural projects. Agricultural projects are viewed as investment activities in which financial resources are allocated to create capital assets, yielding benefits over a prolonged period. Consequently, youths' decisions to cultivate crops or rear economic animals, among other investment options, are influenced by their socioeconomic characteristics,

along with the cost and expenditure profile of such projects. Thus, this study aims to investigate the factors that drive youths' interest in investing in crop and animal projects within the rural areas of Akwa Ibom State.

1.1. Who is a Youth?

The term 'youth' lacks a universally accepted definition. Certain schools of thought regard this phase as a progression from the dependency associated with childhood to the autonomy characteristic of adulthood. This stage is typically marked by sexual maturation, the peak of physical and emotional strength, and an increasing social and economic independence from parents and guardians. In developing societies, this phase often extends due to various social, economic, and political instabilities, among other factors (Akpabio, 2012). Generally, "youth" as a social construct is predominantly defined in terms of age. Consequently, the age range classified as youth varies significantly, encompassing ages from 10 or 11 years in some traditional African societies to as high as 35 years in countries such as South Africa, Nigeria and Tanzania.

In an effort to 'standardize' the definition of youth, international organizations such as the United Nations and the Commonwealth of Nations characterize youth as individuals aged 15 to 29. The Population Reference Bureau (PRB) defines youth as encompassing those aged 10 to 24 years. Furthermore, the African Youth Charter, established in 2006 by the African Union, specifies that youth are those within the age range of 15 to 35 years. Nigeria's National Youth Development Policy defines youth as young individuals aged 18 to 35 years. In Nigeria, the inclination to extend the youth category to encompass individuals up to 35 years and beyond reflects the emerging trend of prolonged youth dependency, which Abdullah (1998) describes as a metaphor for Africa's poverty. This trend indicates that many young people in the country struggle to achieve economic self-sufficiency, primarily due to the volatile economic conditions. Therefore, for the purposes of this analysis and in alignment with the definition provided by Nigeria's National Youth Development Policy, this study adopts the age range of 18 to 35 years as a coherent definition of 'youth' in Nigeria.

1.2. Justification for Involving Youth in Agricultural Production in Nigeria

The necessity for heightened engagement of the youth population in agricultural endeavors is supported by several compelling factors. First, research indicates that the average age of a Nigerian farmer is approximately 50 years, with projections suggesting it could increase to around 60 years by 2030 (Akpan et al., 2022; Akpan et al., 2023b). This scenario is exacerbated by an anticipated 50% rise in the migration of youth from rural to urban areas by 2030. It raises concerns regarding the capacity of the aging farming population to produce sufficient food to meet the projected demand of more than 230 million people in 2030. Furthermore, the current youth unemployment rate in Nigeria stands at an alarming 6.9% (NBS, 2025). This high level of unemployment imposes significant costs on the economy, society, and families, resulting in both economic and social repercussions (Ajaegbu, 2012; Effiong et al., 2018, CBN, 2025). Economically, it can diminish overall output, undermine the tax base, and heighten welfare expenditures. Socially, it may lead to escalated crime, kidnapping, social unrest, and a greater dependency burden on the employed populace. For families, the consequences may include financial difficulties, increased stress, and diminished opportunities for younger individuals. Additionally, unemployment fosters idleness among youth, which can manifest in heightened crime rates, mental health challenges, substance abuse, and violence. Given the multitude of opportunities inherent in agricultural production and its extensive value chain, the agricultural sector holds significant potential for alleviating youth unemployment, as well as unemployment in general, within the country.

Besides, in the first quarter of 2024, the nation's food import expenditure totaled ₦920.54 billion (approximately $689.88 million), marking a substantial increase from ₦471.39 billion during the same period in 2023, which reflects a rise of 95.28% (Nigerian Custom Service, 2024). Should these trends persist, the availability of food, various economic activities, and even broader economic development will increasingly hinge on external factors that are beyond our control. Consequently, there is an urgent imperative to reverse this trend through heightened investment in agriculture. The youth population, endowed with significant potential, plays a crucial role in this regard, particularly considering various innovations available in the sector. Furthermore, it is imperative to alter the negative perception of farmers and the field of agriculture as a whole in Nigeria. Young individuals are well-positioned to act as catalysts for this much-needed transformation, as they demonstrate a strong inclination towards embracing fresh concepts, ideas, and technology (Udousung et al., 2018, Edet et al., 2024c). These qualities are essential in reshaping both the outlook and practices within the agricultural sector of the nation. Currently, agricultural practices in Nigeria are primarily conducted on a small scale and rely on rudimentary technology (Akpan et al., 2015b). This labor-intensive approach demands a significant amount of energy and capability from farmers to carry out various tasks in the sector. As the farming population in the country continues to age, it is becoming increasingly important to target the youth population, who possess a wealth of energy and potential, making them well-suited to take on the challenges in the agricultural sector.

The current vibrant and rapidly growing agricultural markets in Nigeria present great opportunities for young Nigerians to generate substantial income through agricultural activities and escape the cycle of poverty. Additionally, there are numerous incentives provided by the government, NGOs, and agricultural agencies in the country that remain largely untapped due to limited involvement of youth in the agricultural sector. Increased participation of young people in agriculture will expose them to a wide range of opportunities in both local and international markets, surpassing those available in other sectors.

2. Literature Review

Numerous studies have addressed the topic of youth participation in agricultural production, yielding various findings. For instance, Nnadi and Akwiwu (2008) explored the factors influencing youth engagement in agricultural activities in Imo State, Nigeria. The empirical findings indicated that age, education, marital status, parental income, parental occupation, household size, and the youth dependency ratio were significant determinants of youth involvement in agriculture. Similarly, Onemolease and Alakpa (2009) investigated the factors influencing adoption decisions among rural youth in the Niger Delta region of Nigeria. Their study encompassed a sample of

332 young farmers from four states within the region. The results indicated that interactions with extension agents, income levels, and gender were crucial determinants of young farmers' adoption of crop-related technologies. Additionally, income, stock size, and gender significantly impacted the utilization of livestock-related technologies, while the adoption of fishery technologies was notably influenced by extension contact, stock size, income, and gender. In a separate study, Adekunle et al. (2009) examined the barriers to rural youth participation in agricultural production in Kwara State, Nigeria, utilizing a sample of 120 respondents selected through a multi-stage cluster random sampling method. The primary obstacles preventing young people from engaging in agriculture were identified as: insufficient access to credit, lack of agricultural insurance, poor returns on investment, limited farming knowledge, and inadequate access to essential farming equipment. In a study conducted by Daudu et al. (2009) in the Makurdi Local Government Area of Benue State, it was found that barriers to youth involvement in agriculture included a lack of commitment, insufficient logistical support, and a shortage of available land for farming. Akpan (2010) highlighted various factors that impede rural youth participation in agricultural production in Nigeria, categorizing these barriers into economic, social, and environmental factors. Economic challenges cited encompassed a lack of access to credit, low profitability in agriculture, a scarcity of agricultural insurance, inadequate initial capital, and shortages of essential production inputs. Social determinants included public attitudes towards agriculture and parental pressures influencing disengagement from the sector. Environmental challenges encompassed inadequate arable land, recurrent low yields, and soil degradation. Akpan additionally explored the motivations behind rural youth participation in non-farm activities, often leading to urban migration. He identified economic pull factors such as the perceived abundance of job opportunities attributed to the presence of industries in cities. Moreover, he highlighted economic push factors, including poor physical infrastructure and limited social services in rural areas, the quest for education and skill development, and the lack of appealing employment prospects. Additional influences comprised a general aversion to rural life or expulsion from communities due to offenses. Nevertheless, he concluded that economic factors predominantly drive rural youth's increasing engagement in non-farm pursuits and migration to urban areas. Donye et al. (2012) investigated youth participation in yam farming within the Wukari Local Government Area of Taraba State, Nigeria, surveying 90 purposively selected youths involved in yam production. The empirical results demonstrated significant correlations between farm size, marital status, and income with the levels of yam production among respondents. Furthermore, Chikezie et al. (2012) examined the factors influencing the adoption of recommended cassava production practices by rural youth in Onu-Imo Local Government Area of Imo State, Nigeria. The outcomes indicated a high level of adherence to the prescribed cassava production methods. Key determinants of adoption included age, gender, marital status, education, farm size, household size, farming experience, amount of credit received, extension services contact, cooperative society membership, yield, and income.

Furthermore, Akpan et al. (2015a) examined the factors affecting the decisions and involvement of youth in agricultural production in southern Nigeria. Their estimates using the Logit model revealed that the duration of youth engagement in social organizations, access to information and communications technology (ICT), the nature of land ownership, and youth access to state-sponsored agricultural programs positively influenced the decision to participate in agricultural activities within this region. Conversely, factors such as gender, years of formal education, and marital status emerged as negative determinants. Furthermore, the study indicated that youth age, the frequency of extension visits, tenure in social organizations, and the intended purpose of farming were positive drivers of youth participation in agricultural activities in rural areas. In contrast, formal education, previous season's farm income, land ownership, and access to credit were found to hinder youth participation in agricultural production within the study area. Afolabi et al. (2022) similarly determined that engagement in agribusiness by young individuals in Southwest Nigeria was positively influenced by perceived benefits versus costs, geographic location, opportunities for training and development, and household size, while gender and personal attitude played opposing roles. Tchokonthe and Mimche (2023) identified key determinants of youth involvement in agriculture in Cameroon, which included age, the number of dependent children, marital status, parental involvement in agriculture, educational attainment, distance from farm to market, prior migration from urban to rural areas, and the presence of public integration programs for agriculture. In a similar vein, Aimua et al. (2023) focused on the factors influencing women's participation in agriculture in Nasarawa State, Nigeria, revealing that the size of farmland and participation in women's cooperatives were significant determinants. Besides, Mukwedeya and Mudhara (2024) highlighted that youth participation in agriculture in Zimbabwe is influenced by a complex array of factors, including demographic, economic, psychological, educational, and technological aspects. Lastly, Mohammad et al. (2024) identified several positive influencers of youth participation in agriculture in Bangladesh, which included gender, farming experience, training in agriculture and youth development, and access to credit, while negative factors comprised age, educational level, and tendencies to migrate.

The bulk of the literature emphasizes youth participation in agricultural production in a general sense, without delving into specifics such as crop or animal production. Given the unique demands and characteristics of each subsector within agriculture, it is imperative to identify and implement targeted policy measures that will effectively support their growth and advancement. Moreover, it is crucial to continually update existing literature to keep pace with the evolving nature of our economy, necessitating the creation of new policy variables and reassessment of existing ones. In light of these considerations, this study seeks to address the existing gaps by investigating the factors that influence the participation of youth in crop and animal production in Akwa Ibom State, southern region of Nigeria.

3. Materials and Methods

3.1. The Study Area

The study was conducted in the rural area of Akwa Ibom State. The state has well demarcated rural and urban areas. The geography of the state supports diverse agricultural activities. The state has thirty one (31) local government areas divided into three agricultural zones.

3.2. Data Source and Sampling Procedures

The multi-stage sampling method was employed to select the necessary respondents for this research. The initial stage involved a purposive selection of three agricultural zones within the State: Uyo, Ikot Ekpene, and Etinan, to ensure adequate representation. The subsequent stage entailed the random selection of two local government areas from each of these zones, resulting in a total of six local government areas being included in the study. The third stage concentrated on the random selection of five villages from each of the local government areas. Consequently, thirty villages were ultimately selected for this research. In the fourth stage, ten youth were randomly chosen from each village using a list of youth provided by the respective villages. This breakdown indicated that five youth farmers engaged in crop enterprises solely and five youth farmers involved in animal production solely were randomly sampled from each selected village. Overall, a total of 300 youth were randomly sampled to gather the requisite information for the study. According to Nigeria's National Youth Development Policy, youth is defined as individuals aged between 18 and 35 years. Therefore, for the purposes of this analysis, this age range was adopted as the accepted definition of 'Youth' in Nigeria.

3.3. Conceptual Framework used in the Study

3.3.1. Theoretical Literature

The research is grounded in the theory of utility maximization. Accordingly, the theory posits that a youth engages in agricultural production solely if it enhances his/her utility in comparison to other available alternatives. This framework thereby links the actions of youth to the concept of utility. It implies that, when faced with a range of options, opportunities, or technologies, a rational youth will always select the option that maximizes utility within the alternative set. However, since the options are considered to be a latent variable, the utility gained from the preferred option remains unobservable; it is instead indicated by the choice of the selected option. Consequently, utility can be exemplified through the selection of options within a given context of alternatives.

$$option_i = \begin{Bmatrix} Agriculture\ if\ U_{max}(V_{agric}) > U_{max}(V_2) \\ Agriculture\ if\ U_{max}(V_{agric}) > U_{max}(V_3) \\ Agriculture\ if\ U_{max}(V_{agric}) > U_{max}(V_4) \end{Bmatrix} \quad (1)$$

The fundamental principle of utility theory posits that individuals seek to optimize their overall satisfaction or utility. Within the realm of agriculture, this implies that young individuals will assess the potential advantages and disadvantages of engaging in various types of farming relative to alternative opportunities. This theory is especially pertinent for elucidating the participation of youth in agricultural production, as it provides insights into why certain young individuals opt for farming while others explore different paths. Nevertheless, the decision of youth to adopt agricultural production methods is influenced by numerous factors that shape their perceived levels of satisfaction. According to Akpan (2010), Udoh et al. (2015), and Akpan et al. (2015a), socioeconomic factors, technological characteristics, and psychological influences significantly affect youth engagement in diverse agricultural production options. Let the various alternatives within the agricultural sector be denoted as (a, b, and c). The variable Z serves as the explanatory factor influencing a youth's choice among the available agricultural alternatives. The coefficients of the explanatory variables are represented by δ, while ε denotes the random error term or the variables that remain unexplained.

$$\begin{Bmatrix} Agric(a) = \beta_1 + \delta_1 Z_1 + \varepsilon_1 \\ Agric(b) = \beta_2 + \delta_2 Z_2 + \varepsilon_2 \\ Agric(c) = \beta_3 + \delta_3 Z_3 + \varepsilon_3 \end{Bmatrix} \quad (2)$$

It is postulated that the explanatory variables (Zi) are uncorrelated with the error term (ε) for each option. Moreover, the errors are presumed to be independently distributed across the alternatives. Given that the agricultural options are numerical in nature, the count can be effectively represented using a Poisson model specification.

3.4. Empirical Model

Number of category of crops and animals owned by youths in the rural area of the state was used to measure the level of youth interest in agricultural project in the rural area. Hence, the number of category of crops and animals owned by respondents were discrete and takes only non-negative integer values; therefore the count-data model was specified. We chose a Poisson model. The model is shown explicitly as;

$$U_i = E\{Y|X\} = \beta_0 + \beta_1 X_1 + \cdots \beta_n X_n \quad (3)$$

In Poisson model, the estimated coefficients correspond to semi-elasticity. Thus, coefficient estimates can be directly converted into marginal effects. For a continuous regressor X_i, the marginal effect is

$$\frac{\delta U_i}{\delta X_i} = \frac{E\{Y|X\}}{\delta X_i} = \exp(X\beta)\,\beta_i = \beta_i U_i = \beta_i e^{\beta_0+\beta_1 X_1+\beta_2 X_2+\cdots\beta_n X_n} \quad (4)$$

Explicitly, the Poisson regression model is shown below:

$$NCP = \emptyset_0 + \emptyset_1 AGE + \emptyset_2 EDU + \emptyset_3 FIN + \emptyset_4 EXT + \emptyset_5 SOC + \emptyset_6 PUR + \emptyset_7 EXC + \emptyset_8 MAR + \emptyset_9 COS + \emptyset_{10} GEN + \emptyset_{11} ICT + \emptyset_{12} AAP + \emptyset_{13} HRS + \mu_i \quad (5)$$

Where;

NCP = Number of category of crops planted by a youth (e.g. cassava, maize, yam, pepper etc.)

AGE = represents the age of a youth in years;

EDU = denotes the years of formal education completed by the youth;

FIN = refers to the farm income earned in the last season, measured in naira currency (₦);

EXT = indicates the number of times an individual had contact with an extension agent during the previous farming season;
SOC = signifies the duration of membership in a social group, expressed in years;
PUR = identifies the purpose of farming, coded as 1 for commercial endeavors and 0 for subsistence use;
EXC = describes the access to credit facilities, represented as a dummy variable where 1 indicates access and 0 signifies a lack thereof;
MAR = indicates the marital status of the farmer, with 1 indicating marriage and 0 signifying single status;
COS = reflects the average daily wage rate for hired labor, measured in naira currency (₦);
GEN = denotes the gender of the youth, with 1 for male and 0 for all others;
ICT = represents access to information and communication technology, quantified by the number of times the youth farmer browses in a week;
AAP = captures the youth's access to state-owned agricultural programs, indicated by the number of programs accessed;
HHS = Household size of youth farmers
HRS = denotes the average number of hours spent on the farm each day, presented as a discrete number; and
μ = is the stochastic error term.

Furthermore, this equation was estimated for the category of animals (NAR) raised by respondents. The Variance Inflation Factor was utilized to assess the potential existence of multicollinearity among the explanatory variables.

4. Results and Discussions

4.1. The distribution of Crop and Animal Enterprises among Youth Farmers

The data displayed in Table 1 elucidates the distribution of crop and animal enterprises among youth farmers in Akwa Ibom State. The findings reveal that approximately 93.33% of rural youth engaged in crop production employ a multi-cropping system or polyculture. This approach has been demonstrated to enhance the economic viability of farmers by increasing their income and improving food security. Furthermore, the adoption of a multi-cropping system mitigates risks related to crop failure and market volatility, thus reducing the likelihood of loan defaults (Akpan et al., 2014). Additionally, this strategy optimizes land productivity as various crops can effectively exploit available resources. Conversely, only 6.67% of rural youth practiced a mono-cropping system, with the average number of crops planted by youth farmers recorded at four per farmer.

Table 1. Distribution of combined enterprises among youth farmers.

Combination of Enterprise	Crop category		Animal category	
	Frequency	Percentage	Frequency	Percentage
1	10	6.67	115	76.67
2 – 3	40	26.67	30	20.00
4 – 5	95	63.33	5	3.33
Greater than 5 enterprises	5	3.33	0	0.00
Total	150	100.00	150	100.00
Mean	4 crops per farmer		1 animal per farmer	

Regarding animal husbandry, it is observed that approximately 76.67% of rural youth involved in animal production raised solely one type of animal, while 23.33% participated in integrated animal production. This trend may be attributed to the fact that animal production is relatively expensive and demands more specialized resources compared to crop production. Moreover, the inherent risks associated with animal production are greater than those in crop cultivation. For example, expenses related to veterinary care and other management costs significantly exceed those incurred in crop production. Additionally, the maturation and gestation periods of most economically significant animals are longer than those of most crops, thereby not providing a favourable investment opportunity for eager youth farmers. Furthermore, according to Akpan et al. (2019), the reduction in the number of animals raised serves as a risk mitigation strategy in response to the high incidence of losses. The overall distribution of agro-enterprises among the sampled youth farmers indicated that the majority (63.33%) of those specializing in crop production cultivated up to five types of crops, whereas 76.67% of those focusing on animal production raised only one species. These findings align with the conclusions drawn by Akpan and Udom (2018).

4.2. Determinants of Youth involvement in Agricultural Production

The factors influencing the interests of youth in crop and animal projects within the rural regions of Akwa Ibom State have been identified and are illustrated in Table 2. The diagnostic statistics indicate a McFadden R-squared value of 0.540 for the crop category equation and 0.690 for the animal category equation. This suggests that approximately 54.0% and 69.0% of the variability in the number of crops cultivated and the number of economic animals raised by youth farmers in the study area can be accounted for by the specified explanatory variables in each model. Furthermore, the outcomes of the normality test confirmed the normal distribution of the error terms generated in the Poisson regressions. The Chi-square tests yielded values of 118.54 and 108.61 for the crop and animal models, respectively, both of which are statistically significant at the 1% probability level. This indicates that the McFadden R-squared values for both equations are statistically significant and that the estimated Poisson regressions exhibit good fit

The empirical findings indicate that the years of formal education (EDU) of youth farmers in rural areas positively correlate with the number of crops cultivated and animals raised. Specifically, an increase of one unit in the educational attainment of a youth farmer corresponds to approximately a 0.054% rise in the diversity of crops cultivated. Similarly, a one-unit enhancement in a youth's formal education is associated with an increase of about

0.0149% in the variety of economic animals kept. This suggests that agricultural engagement among youths in the state's rural areas escalates with an increase in their years of formal education.

Table 2. Poisson Estimates on Determinants of Participation of Youth in Agricultural Activities in Akwa Ibom State.

	Number of Category of Crop			**Number of Category of Animal**		
Variable	Coefficient	Z Values	Marginal effect	Coefficient	Z Values	Marginal effect
Constant	0.731	3.61***	-	-0.946	-2.67**	-
Age of youth	-0.004	-0.74	-0.013	-0.0004	-0.04	- 0.00028
Educational level	0.017	2.33***	0.054	0.021	1.76*	0.0149
Farm income	4.36e-8	0.52	1.39e-7	7.04e-7	5.21***	5.02e-7
Extension services	0.009	2.95***	0.029	0.017	3.01***	0.0121
Socialization	0.006	4.82***	0.019	0.028	2.05**	0.0199
Purpose of farming	0.236	3.11***	0.753	0.162	1.57	0.1155
Access to credit	0.067	0.91	0.214	0.279	2.27**	0.1989
Average daily wage paid	-4.49e-5	-1.09	-1.43e-4	-0.0001	-2.71***	-7.13e-5
Sex of youth	-0.017	-0.26	-0.054	-0.120	-1.24	-0.0856
Access to govt. agric. programs	0.044	1.84*	0.140	0.167	3.85***	0.1191
Household size	0.034	2.24**	0.109	-0.022	-2.89***	-0.0157
Av.no. of hours spent on farm	-0.004	-0.42	-0.013	0.009	0.48	0.0064
Access to ICT facilities	0.216	2.11**	0.678	0.150	3.21***	0.1160
	Diagnostic Tests					
McFadden R^2	0.540			McFadden R^2		0.690
Adjusted R-squared	0.458			Adjusted R-squared		0.512
Chi-square (13)	118.54***			Chi-square (13)		108.61***
Normality test	1.150			Normality test		2.381
Log-likelihood	−329.29			Log-likelihood		−368.14

Source: Computed by authors using Stata software, data from field survey 2024. Asterisks *, ** and *** represent significant levels at 10%, 5% and 1% respectively. Variables are as defined in equation 2.

A higher level of education potentially enables youth farmers to prioritize commercial agriculture, particularly in the context of the prevailing high youth unemployment rates in the nation. Moreover, it enhances their likelihood of adopting advanced agricultural technologies. The strong inclination of educated youth farmers toward commercial agricultural production can also be attributed to the entrepreneurial skills development initiatives integrated into the educational curriculum by the government. The Nigerian government has placed significant emphasis on student self-development and self-reliance post-education by promoting entrepreneurial skill acquisition for graduates. Numerous studies, including those by Nnadi and Akwiwu (2008), Akpan (2010), Chikezie et al. (2012), Akpan et al. (2015), Tchokonthe and Mimche (2023), Mukwedeya and Mudhara (2024), and Mohammad et al. (2024), have reported the critical influence of education on youth participation in agriculture.

Likewise, the frequency with which young farmers engage with agricultural extension agents significantly affects the number of crop varieties cultivated and livestock raised. Specifically, each additional visit from an extension agent corresponds to a 0.029% increase in the number of crop categories grown and a 0.012% increase in the number of animals raised. Enhanced interaction with extension agents likely enhances the confidence of youth farmers and fosters the adoption of innovative practices. This outcome implies that a robust extension system can facilitate greater youth involvement in agricultural activities in the rural regions of the State. This finding aligns with the studies conducted by Onemolease and Alakpa (2009), Chikezie et al. (2012), and Akpan et al., (2015).

Similarly, participation in social organizations has been shown to amplify youth engagement in agricultural endeavors positively. The results indicate that a one-year increase in social group involvement among rural youth farmers leads to a 0.019% rise in both the number of crop types cultivated and the categories of economic animals maintained. This finding underscores the significance of social capital development among youths in the rural areas of Akwa Ibom State, corroborating the conclusions of Akpan (2010), Chikezie et al. (2012), and Akpan et al. (2015).

Furthermore, the purpose for participating in agricultural activities by rural youth farmers is strongly positively correlated with the number of crop categories cultivated by youth in the rural areas of the State. Specifically, for each youth who perceives crop production as a commercial enterprise, the likelihood of increasing the number of crops grown rises by 0.753%. This outcome meets the a priori expectations, as commercially oriented farmers are anticipated to cultivate a greater variety of crops in order to maximize profit and mitigate the risks associated with crop production.

The results further indicated that access to credit facilities has a positive impact on the number of economic animals raised by youth farmers in the region. The data revealed that a one-unit increase in credit availability is associated with a 0.199 increase in the likelihood of raising more economic animals. It is widely recognized that credit serves to enhance agricultural production by enabling the mobilization of farm resources. The findings underscored that credit plays a more critical role in animal production than in crop production among rural youth in Akwa Ibom State. Similar results have been documented by Chikezie et al. (2012), Adekunle et al. (2009), and Mohammad et al. (2024).

Conversely, the costs associated with hired labor exert a negative effect on animal production among youth farmers in the study area. The findings suggest that an increase in wage rates is likely to diminish the probability of expanding the number of economic animals raised by youth farmers in the region. Given that rural-urban youth migration poses a significant challenge, along with the labor-intensive production methods adopted by youth farmers, the labor supply in the rural areas of the state has become inelastic due to a general scarcity of available workers. Furthermore, the majority of labourers in these rural areas often lack the necessary skills or exhibit minimal interest in animal production activities.

Additionally, the findings revealed that enhanced access to state-owned agricultural programs or projects significantly boosts youth farmers' participation in both crop and animal production within the rural areas of the

state. For example, a unit increase in youth engagement in government agricultural programs correlates with a 0.140% increase in the number of crop enterprises adopted by a youth farmer and a 0.119% increase in the number of animal enterprises adopted. Youth participation in these government agricultural initiatives has provided considerable benefits to both the youth and agricultural development. Such engagement is known to foster job creation, diminish poverty among youth, generate entrepreneurial opportunities, and strengthen food security and rural development by curtailing rural-urban migration. Youth involvement in government agricultural programs has facilitated the introduction of modern innovations and technological advancements within agricultural systems, which are vital for sustainable agricultural production. This finding aligns with the conclusions of Akpan et al. (2015), Afolabi et al. (2022), Tchokonthe and Mimche (2023), and Mohammad et al. (2024).

The findings of the study indicate that household size serves as a positive determinant of the number of crop enterprises undertaken by youth farmers while negatively influencing the number of economic animals they maintain in the region. Specifically, a one-unit increase in a youth farmer's household size correlates with a 0.109% increase in the number of crop enterprises. Conversely, this same one-unit increase in household size leads to approximately a 0.0157% decrease in the quantity of economic animals managed by the youth in the studied area. Traditionally, household size has been recognized as a significant factor contributing to farm labour in sub-Saharan Africa. This finding aligns with the research conducted by Nnadi and Akwiwu (2008), Akpan (2010), Chikezie et al. (2012), and Afolabi et al. (2022).

Additionally, the coefficient associated with the ICT variable demonstrates a significant positive relationship with the number of crop and animal enterprises undertaken by youth farmers in the area under study. A one-unit rise in access to ICT is associated with an anticipated increase of 0.678% in the number of crops planted and a 0.116% increase in the number of economic animals kept. Enhanced access to ICT facilities offers numerous benefits for youth engagement in agriculture, rendering it more accessible, interactive, and potentially lucrative. Through the utilization of technology, youth farmers can access e-commerce platforms, online marketing opportunities, educational resources, networking and collaboration options, as well as convenient financing agents, along with other crucial information that can elevate agriculture into a viable and attractive career option. This finding is consistent with the conclusions drawn by Akpan et al. (2015).

5. Conclusion and Recommendations

Enhancing youth engagement in crop and animal production should be regarded as a viable strategy for addressing food insecurity, social unrest, crime, terrorism, drug abuse, kidnapping and extreme poverty in Nigeria. Although many young individuals perceive the agricultural sector as unappealing and lacking essential economic incentives for improving their well-being, this viewpoint is misguided, given that Nigeria is fundamentally an agrarian society. Therefore, any effort to rejuvenate the agricultural sector constitutes a direct endeavor to enhance the well-being of Nigerians. Youth participation in agricultural activities must be recognized as one of the most effective means to revitalize this sector within the country. Research results indicate that factors such as youths' years of involvement in social organizations, contact with the agricultural extension system, access to credit facilities, household size, economic rationale for engaging in agricultural production, levels of farm income, and access to state-funded agricultural programs significantly contribute to youth participation in crop and animal production in rural areas. Conversely, the cost of hired labor serves as a barrier to youth involvement in agricultural production.

In light of these findings, it is recommended that stakeholders work to empower and bolster youth groups and foster social capital formation in rural communities across the state. Additionally, the government of Akwa Ibom State should enhance the agricultural extension system and establish more government-sponsored agricultural intervention programs. A targeted input supply system should also be instituted specifically for youth farmers to reduce production costs.

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